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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,355	02/19/2004	Michael B. Korzenski	ATMI-686-CIP	4186

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EXAMINER	
NGUYEN, TUAN H	

ART UNIT	PAPER NUMBER
2813	

DATE MAILED: 12/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/782,355	KORZENSKI ET AL.	
	Examiner	Art Unit	
	Tuan H. Nguyen	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) *19-40* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/28/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I, claims 1-18 in the reply filed on 10/7/05 is acknowledged. The traversal is on the ground(s) that "the composition as recited in claim 1 is the same as that recited in claim 19". This is not found persuasive because "the method of removing silicon-containing substances for a substrate having the same thereon, said method comprising" is broad, it does not exclude other methods of removing the silicon substances.

The requirement is still deemed proper and is therefore made FINAL.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-18 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7, 9, 11-14 of copending Application No. 10/724,791. Although the conflicting claims are not identical, they are not patentably distinct from each other because they are both directed to a sacrificial silicon-containing layer etching composition comprising a SFC, at least a co-solvent, at least one etchant species, and at least one surfactant.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-7, 12-18 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-24 of copending Application No. 10/790,535. Although the conflicting claims are not identical, they are not patentably distinct from each other because They are both directed to a sacrificial silicon-containing layer etching composition comprising a SFC, at least a co-solvent, at least one etchant species, and at least one surfactant.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6, 12-14, 16, 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Xu et al. (Pub. No. 2003/0125225).

Xu et al. discloses the claimed sacrificial silicon-containing layer etching composition comprising a supercritical fluid (SCF), at least one co-solvent, at least one etchant species, and at least one surfactant (see Abstract, and paragraph [0053]).

With respect to claims 2-3, see paragraph [0041] for SCF species.

With respect to claims 4-6, paragraphs [0017], [0045], [0089] disclose the co-solvent species may by any suitable type including methanol, ethanol, isopropanol, and higher alcohols.

With respect to claims 12-14, see paragraph [0046].

With respect to claims 7, 16-17, since Xu et al. teaches the use of same composition and etchant species XeF_2 for removing unwanted materials in semiconductor processing, it would be inherently included the removal of silicon or silicon oxide on the silicon substrate.

Claims 1-7, 12-14, 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Saga (Pub. No. 2004/0259357)

Saga teaches the use of supercritical fluid comprising carbon dioxide (paragraph [0012]) in the surface treatment for cleaning the surface of the substrate (removing

unwanted material typically silicon oxide, see paragraph [0052]) including co-solvent, etchant species and surfactant (see abstract, paragraph [0019], [0027], [0031] [0036]. Saga fails to teach the use of ammonium bifluoride as an etchant.

With respect to claim 2, see paragraph [0012].

With respect to claims 4-6, see paragraph [0033].

With respect to claims 7, 16, see paragraph [0052].

With respect to claims 12-14, see paragraph [0032].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 15, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xu et al. or Saga.

Xu et al. or Saga discloses substantially the claimed composition except the weight percentages of the ingredients of the composition as recited in claims 15, 18; however, since Xu et al. or Saga teaches the same ingredients of the composition, it would have been obvious to one having skilled in the art at the time the invention was made to have selected a suitable weight percentages of the ingredients in the composition for an optimum result. In re Aller, 105 USPQ 233 (CCPA 1955). See also In re Jones 162 USPQ 224 (CCPA 1969) (determining optimum reaction by routine

experimentation with a limited number of species is obvious) and In re Boesch, 205 USPQ 215 (CCPA 1980) (discovery of optimum value of result effective variable in known process is ordinary within skill of art).

Claims 8-11, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saga et al. in view of Mullee (US pat. No. 6,306,564).

Saga teaches substantially the claimed composition including ammonium fluoride as an etchant as explained above.

Saga fails to teach ammonium bifluoride or XeF_2 as an etchant in the composition.

Mullee teaches the use of either ammonium fluoride or ammonium bifluoride in supercritical fluid for removing residue or other unwanted materials on the wafer (col. 4, second paragraph).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have replaced ammonium fluoride with amonium bifluoride as an etchant in the etching composition as suggested by Mullee in Saga since the substitution of art recognized equivalence as suggested by Mellee is within level of those skilled in the art.

With respect to the use of XeF_2 since it is a well-known and commercial available etchant for use in the semiconductor processing, it would have been obvious to those skill in the art to select a suitable known etchant for removing silicon material as in the instant claimed invention.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. DeYoung et al. discloses the use of SCF for cleaning.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan H. Nguyen whose telephone number is 571-272-1694. The examiner can normally be reached on 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan H. Nguyen
Primary Examiner
Art Unit 2813